

REMARKS

Restriction

In the Office Action of April 21, 2003, the Examiner argued that the inventions of Group I (compound claims 1-7) were related to the inventions of Group II (electrochemical cell claims 8, and 10-11) and Group III (capacitor cell claim 9) were "related as product and process of use." Applicants traversed the Restriction pointing out that none of claims 8-11 were process claims.

The Examiner now responds by asserting that there was never an indication made that claims 8-11 are process claims. The Examiner argues that Groups II and III "employ" the product of Group I and thus "are in fact is [sic] a process for using the compounds of group I." Applicants respectfully submit that this argument is incorrect. The claims of Groups II and III are clearly not process claims and thus can not be related to the claims of Group I as product and process of use. The Examiner cites no authority for asserting that MPEP §806.05(h) is applicable to situations that do not involve process of use claims. This section of the MPEP, as well as the corresponding form paragraph, refers to the "process of using as claimed." The claims of Groups II and III undeniably do not claim a process of use.

Instead, the relationship between the claims of Group I and the claims of Groups II and III is one of subcombination and combination. See MPEP §806.05(c). This type of relationship requires two-way distinctness for Restriction, and such two-way distinctness has not been shown in the instant case.

Moreover, there is no burden imposed upon the PTO in examining the claims of Groups II and III with the elected claims of Group I. Once the product claims are found to be allowable, the combination claims of Groups II and III will also necessarily be allowable.

Also, as a point of clarification, claim 10 and 11 are not electrochemical cell claims. They are composition claims.

Withdrawal of the Restriction is again respectfully requested.

Rejection under 35 U.S.C. §103 Koch et al.

Claims 1-7 and 12-13 are rejected as allegedly being obvious in view of Koch et al. (US '602). This rejection is again respectfully traversed.

Firstly, it is noted that claims 14, 15, 19, and 20 are said to be included within elected Group I. However, no rejection as to these claims is presented in the Office Action.

Further, the rejection presents no rationale as to how the disclosure of US '602 would lead one to a compound of applicants' claims 19 and 20. It is noted that that the broad genus of US '602 does not encompass or suggest the anions within the literal scope claims 19 and 20.

In the Office Action, the Examiner alleges that US '602 discloses 1-ethyl-3-methylimidazolium and DMPI (1,2-dimethyl-3-propylimidazolium) are "preferred" cations. This is incorrect. At column 4, lines 21-24 US '602 lists 1-ethyl-3-methylimidazolium as an example of an imidazolium cation. There is no statement that this cation is preferred. At column 4, lines 64-67, US '602 describes the ability of 1,2-dimethyl-3-propylimidazolium to dissolve quantities of LiX salts. Again, there is no statement that this cation is preferred.

The Examiner also asserts that US '602 specifically indicates that the anions disclosed at column 3, lines 50-60 are "preferred." Here again, the assertion that these anions are preferred is incorrect. Nothing within the disclosure of US '602 suggests that the anions at column 3, lines 50-60 are preferred other the anions defined by the formulas at column 3, lines 10-31 and column 3, lines 32-44.

Overall, the disclosure of anions at column 3, lines 8-55 presents a broad genus of anions. Nothing within this disclosure suggests that any anion encompassed within this genus is preferred over any other. To establish obviousness, the rejection must present a rationale as to why one of ordinary skill in the art would be directed to a particular embodiment within a broad genus. The rejection sets forth no motivation as to why one or ordinary skill in the art, presented with this broad genus of anions, would select an anion in accordance with applicants group A.

When one looks to the specific embodiments disclosed in US '602 and applies the analysis used in *In re Jones*, 21 USPQ2d 1941 (Fed. Cir. 1992), it is evident that US '602

does not suggest a compound of applicants' claimed invention. The specific ionic fluids disclosed in US '602 are 1-ethyl-3-methylimidazolium perfluoro-1,1-dimethylpropyl alkoxide in which the anion is $\text{CF}_3\text{CF}_2(\text{CF}_3)_2\text{CO}^-$, perfluoro-1-ethyl-3-methylimidazolium imide in which the anion is bis(trifluoromethylsulfonyl) imide ("Imide"), 1,2-dimethyl-3-propylimidazolium Imide, 1,2-dimethyl-3-propylimidazolium tris(trifluoromethylsulfonyl) methide ("Methide"), n-butylpyridinium Imide, n-butylpyridinium Methide, 1-ethyl-3-methylimidazolium perfluoro-1,1-dimethylpropyl alkoxide, and perfluoro-1-ethyl-3-methylimidazolium Imide.

Thus, in terms of specific species, US '602 disclose ionic fluids in which the cations are substituted by alkyls or perfluoralkyls and the anions are $\text{CF}_3\text{CF}_2(\text{CF}_3)_2\text{CO}^-$, bis(trifluoromethylsulfonyl) $[-\text{N}(\text{SO}_2\text{CF}_3)_2]$, or tris(trifluoromethylsulfonyl) $[-\text{C}(\text{SO}_2\text{CF}_3)_3]$.

In *Jones*, the Court looked to the specific salts described in the prior art to see if they suggested the claimed salt, i.e., the 2-(2'-a minoethoxy)ethanol salt of dicamba, a primary acyclic amine salt with an ether linkage,. While the prior art broadly generically disclosed amine salts of dicamba, the Court compared the structure of the claimed amine salt with the specific amine salts disclosed by the prior art. The prior art diethanolamino salt was said to be a secondary amine without an ether linkage. The prior art morpholino salt, while having an ether linkage, was noted to be cyclic. Finally, the prior art isopropylamino salt was said to be a primary amine but with a structure that was "quite different." Based on this analysis, the Court held that the prior art did not suggest the claimed salt.

In the instant case, the anions of the specific ionic fluids disclosed by US '602 are $\text{CF}_3\text{CF}_2(\text{CF}_3)_2\text{CO}^-$, $-\text{N}(\text{SO}_2\text{CF}_3)_2$, and $-\text{C}(\text{SO}_2\text{CF}_3)_3$. Such structures in no way suggest a phosphate structure, let alone a fluorinated phosphate structure in accordance with applicants' claims. The rejection presents no rationale as to how one of ordinary skill in the art, using the analysis by the *Jones* Court, would arrive at an embodiment in accordance with applicants' claimed invention. The assertions in the recent Office Action of stated preferences within the disclosure of US '602 are incorrect, as discussed above.

Further, an obviousness analysis must also take into account statements within the prior art that suggest away from the claimed invention. US '602 in Table 3 list the anion $(\text{CF}_3)_2\text{PF}_4^-$, although no ionic fluid containing this anion is disclosed. Furthermore, of the

anions listed in Table 3 that have a van der Waals volume exceeding 100 \AA^3 , a requirement of the invention of US '602, $(\text{CF}_3)_2\text{PF}_4^-$ just barely has a van der Waals volume exceeding 100 \AA^3 , i.e., 105 \AA^3 (calculated via Hyperchem® software). The other anions of the genus of US '602 that are listed in Table 3 all have van der Waals volumes exceeding that of $(\text{CF}_3)_2\text{PF}_4^-$. Thus, the listing of the anions in Table 3 suggests away from the use of $(\text{CF}_3)_2\text{PF}_4^-$ due to its comparatively low van der Waals volume.

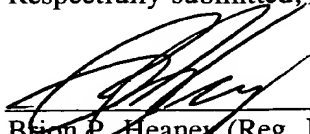
In addition, US '602 does not lead one of ordinary skill in the art to the cations described in applicants' claims 4 and 5. In the ionic liquids specifically disclosed in US '602, the cations are 1-ethyl-3-methylimidazolium, perfluoro-1-ethyl-3-methylimidazolium, 1,2-dimethyl-3-propylimidazolium, and n-butylpyridinium. These cations do not suggest the cations recited in applicants' claims 4 and 5.

Furthermore, applicants' claims 12 and 13 recite specific compounds which have the anions tris(pentafluoroethyl)trifluorophosphate and tris(nonafluorobutyl)trifluorophosphate. Nothing within disclosure of US '602 suggests these anions.

As mentioned above, the disclosure of US '602 does not encompass or suggest the anions within the literal scope claim 19. To further demonstrate the nonobvious character of these compounds, enclosed herewith is a Rule 132 Declaration by Dr. Nikolai Ignatyev, one of the coinventors. The Declaration presents test results showing that an ionic liquid with the anion $[(\text{C}_2\text{F}_5)_3\text{PF}_3]^-$ has greater thermal stability than an ionic liquid with the anion $[(\text{CF}_3)_3\text{PF}_3]^-$. Such results are in no way suggested by US '602.

In view of the above remarks, it is respectfully submitted that Koch et al. fails to render obvious Applicants' claimed invention. Withdrawal of the rejection under 35 U.S.C. §103 is respectfully requested.

Respectfully submitted,



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